

Common Core Standards Curriculum Map - Geometry  
**Quarter One**

Unit One - Geometric Foundations, Constructions and Relationships (24 days/12 blocks)

<i><b>Common Core Standards and Content to Be Learned</b></i>	<i><b>Mathematical Practices and Essential Questions</b></i>	<i><b>Prior Learning, Current Learning and Future Learning</b></i>	<i><b>Instructional Activities (I) Formative Assessments (FA) Summative Assessments (SA) Parent/Student Support (PSS)</b></i>
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*Adapted from the Charles A. Dana Center work*

<p><b>Experiment with transformations in the plane.</b>  <b>G-CO.1.</b> Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.</p> <p><b>Make geometric constructions [Formalize and explain processes]</b>  <b>G-CO.12.</b> Make formal geometric constructions with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc.).  <i>Copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; and constructing a line parallel to a given line through a point not on the line.</i></p> <p><b>Prove geometric theorems. [Focus on validity of underlying reasoning while using a variety of ways of writing proofs]</b>  <b>G-CO.9.</b> Prove theorems about lines and angles. <i>Theorems include: vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent; <del>points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints.</del></i>  <b>G-CO.10.</b> Prove theorems about triangles. <i>Theorems include: measures of interior angles of a triangle sum to 180°; <del>base angles of isosceles triangles are congruent; the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length; the medians of a triangle meet at a point.</del></i></p> <p>A)• Know precise definitions of geometric terms (e.g., angle, circle, perpendicular line, parallel line, and line segment), based on the undefined notions of point, line, distance along a line, and distance around a circular arc.</p> <p>B)• Make formal geometric constructions with a variety of tools and methods. Constructions include:  o Copying a segment/angle.</p>	<p><b>SMP 3</b> Construct viable arguments and critique the reasoning of others.</p> <p><b>SMP 5</b> Use appropriate tools strategically.</p> <p><b>SMP 7</b> Look for and make use of structure.</p> <p>How does the use of the language of geometry help you to understand more complex geometric ideas and theorems?</p> <p>In what situations would it be better to use a geometric sketch as opposed to a formal construction?</p> <p>How does the knowledge of theorems,</p>	<p><b>Prior Learning:</b>  In grade 4, students drew and identified points, lines, line segments, rays, angles, and parallel and perpendicular lines (4.G.1). Students also classified 2-D figures, based on the presence or absence of parallel and perpendicular lines and angles, including right triangles (4.G.2). In grade 7, students drew geometric shapes freehand as well as with tools such as rulers, protractors, and technology (7.G.2). Students also used supplementary, complementary, vertical, and adjacent angles to write and solve simple equations involving an unknown angle (7.G.5). In grade 8, students used informal arguments to establish facts about angle relationships such as the angle sum and exterior angles of triangles as well as angle relationships formed by parallel lines cut by a transversal (8.G.5). Students explained a proof of the Pythagorean Theorem and its converse and applied it to find unknown side lengths or the distance between two points in a coordinate system (8.G. 6, 7, 8).</p> <p><b>Current Learning:</b>  Students study precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc. Students make formal geometric constructions with a variety of tools and methods using a compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc. (e.g., copy a segment and an angle, bisect a segment and an angle, construct perpendicular lines, the perpendicular bisector of a line segment, and a line parallel</p>	<p><a href="#">Geometric Constructions</a> (I) (PSS) Web-based demonstration (A)</p> <p><a href="#">Warehouse problem</a> (I) &amp; (FA) Incenter &amp; angle bisectors(B) and/or  <a href="#">Hydrant problem</a> (I) &amp; (FA) perpendicular bisectors(B)</p> <p><a href="#">Sprinklers &amp; Amusement Parks</a> (page 351) (I) (T)  Use SketchPad to enhance the activity</p> <p><a href="#">Parallel Lines and Angle Relationships</a> (I) (PSS)  Interactive activity</p> <p><a href="#">Parallel Line Worksheet</a> (PF)  Identify relationships based on given information</p> <p><a href="#">Worksheets</a> (PF) (PSS)  free Kuta worksheets</p> <p><a href="#">Do Now</a> Parallel Lines (FA)(A)</p> <p><a href="#">Parallelodyme</a> (SA)(A)(B)  <a href="#">Parallelodyme Map</a>  distance formula, mid pt formula, constructions  <a href="#">Parallelodyme Rubric</a>  <a href="#">Parallelodyme Key/Excel Grading Tool</a></p> <p><a href="#">Exit Ticket</a> Paragraph to Two-Column Proof (FA) (C)</p>
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<ul style="list-style-type: none"> <li>o Bisecting a segment/angle.</li> <li>o Constructing perpendicular lines.</li> <li>o Constructing a perpendicular bisector of a line segment.</li> <li>o Constructing a line parallel to a given line through a point not on the line.</li> </ul> <p>C)• Prove theorems about lines and angles. Theorems include, but are not limited to:</p> <ul style="list-style-type: none"> <li>o Congruency of vertical angles.</li> <li>o Relationship between angles formed by intersection of parallel lines and a transversal.</li> </ul> <p>D)• Prove the triangle angle sum theorem.</p>	<p>postulates, and definitions help to prove geometric concepts?</p>	<p>to a given line through a point not on the line). Students prove theorems about lines and angles (e.g., relationships between parallel lines and a transversal, and vertical angles) and they prove the triangle angle sum theorem.</p> <p><b>Future Learning:</b> Students will use the basic geometric terms and definitions throughout the year. In addition, students will revisit and expand upon construction and proofs later this year in units on triangle congruency [unit 1.2], right triangles [unit 2.2], polygons [unit 3.1] and circles [units 3.3, 4.1]. Students will continue to use critical and logical thinking in algebra 2 and fourth-year math courses. The basic geometric terms and constructions are applicable to real-life situations and professions such as civil engineering, architecture, and construction-related work.</p>	<p><a href="#">Alt. Interior Angle Activity (I)</a> <a href="#">TI-Nspire problems (SA)</a> (A) <a href="#">Student Directions</a> <a href="#">Teacher Notes</a></p> <p><a href="#">Sketchpad: Parallel Lines and their Angles (I)</a> (B)</p> <p><a href="#">Bisect an Angle (PF)</a> (B)</p> <p><a href="#">The Distance Formula (PSS)</a>(A)</p> <p><a href="#">Distance Formula Task (CU)</a>(A) Pythagorean Thm/Distance on the plane -OR- <a href="#">Distances Between Cities (CU)</a>(A)</p> <p><a href="#">Points/Lines/Planes (PSS)</a>(A)</p> <p><a href="#">Video-Proof of Triangle Sum Theorem (PSS)</a> (I) (D)</p>
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<p>Burrillville</p> <p>Will be populated at a later date</p>	<p>Coventry</p> <p>Glencoe Geometry: Integration, Application, Connection</p> <p>G-CO.1: 1.2, 1.4, 1.5, 1.6, 1.7, and teach definitions of angle, angle bisector (circle,</p>	<p>Ponaganset</p> <p><u>Geometry</u> Houghton Mifflin 1-2, 1-3, 1-4, 1-510-1, 10-2, 10-3, 10-4, 10-5, 2-1, 2-2 ,2-3, 2-4, 2-5, 2-6, 3-1, 3-2, 3-3, 3-4, 3-5</p>	<p>North Providence HOLT MCDOUGAL BOOK: Ch. 1-1, 1-2, 1-3, 1-4, 2-6, 3-1, 3-2, 3-3, 3-4(constructions), 4-3 PRENTICE HALL BOOK: Ch. 1-2, 1-3, 1-4, 1-6, 2-1,</p>	<p>Smithfield</p> <p>Will be populated at a later date</p>
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*Adapted from the Charles A. Dana Center work*

	<p>perpendicular line, parallel line, line segment and arc length using glossary pages 814-824. Introduced in grade 8. Review as needed.</p> <p>G-CO.12: Teach geometric constructions on pages 15, 26, 27, 31, 36, 39, 47, 48, 52, 54, 56 and 154</p> <p>G-CO.9: 2.5, 2.6, 3.1, 3.2, 3.4</p> <p>G-CO.10: 4.2, P. 189-191 See <a href="#">Video Proof of Triangle Angle Sum Theorem</a> also informal visual proof P. 188</p>	<p><u>Glencoe Geometry:</u> Integration, Application, Connections</p> <p>G-CO.1: 1.2, 1.4, 1.5, 1.6, 1.7, and teach definitions of angle, angle bisector (circle, perpendicular line, parallel line, line segment and arc length using glossary pages 814-824. Introduced in grade 8.</p> <p>G-CO.12: Teach geometric constructions on pages 15, 26, 27, 31, 36, 39, 47, 48, 52, 54, 56 and 154</p> <p>G-CO.9: 2.5, 2.6, 3.1, 3.2, 3.4</p> <p>G-CO.10: 4.2, P. 189-191 See <a href="#">Video Proof of Triangle Angle Sum Theorem</a> also informal visual proof P. 188</p>	7-1, 7-2, 7-3	
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Unit Two - Triangle Congruency (16 days/8 blocks)

<b><i>Common Core Standards and Content to Be Learned</i></b>	<b><i>Mathematical Practices and Essential Questions</i></b>	<b><i>Prior Learning, Current Learning and Future Learning</i></b>	<b><i>Instructional Activities (I) Formative Assessments (FA) Summative Assessments (SA) Parent Student Support (PSS)</i></b>
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<p><b>Understand congruence in terms of rigid motions</b>  <i>[Build on rigid motions as a familiar starting point for development of concept of geometric proof].</i></p> <p><b>G-CO.6.</b> Use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure; given two figures, use the definition of congruence in terms of rigid motions to decide if they are congruent.</p> <p><b>G-CO.7.</b> Use the definition of congruence in terms of rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent.</p> <p><b>G-CO.8.</b> Explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow from the definition of congruence in terms of rigid motions.</p> <p><b>Prove geometric theorems</b> <i>[Focus on validity of underlying reasoning while using a variety of ways of writing proofs].</i></p> <p><b>G-CO.9.</b> Prove theorems about lines and angles. <i>Theorems include: vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent; points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints.</i></p> <p><b>G-CO.10.</b> Prove theorems about triangles. <i>Theorems include: measures of interior angles of a triangle sum to 180°; base angles of isosceles triangles are congruent; the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length; the medians of a triangle meet at a point.</i></p> <p>A)• Apply and describe the effects of rigid motions</p>	<p><b>SMP 2</b> Reason abstractly and quantitatively.</p> <p><b>SMP 3</b> Construct viable arguments and critique the reasoning of others.</p> <p><b>SMP 7</b> Look for and make use of structure.</p> <p>How is rigid motion used to identify corresponding parts of sides and angles?</p> <p>Why is congruence criteria an essential component of proofs and problem solving?</p> <p>Describe special segments and angles in triangles and explain how can they be used to solve problems?</p> <p>Given a proof, how can you use logical reasoning to critique, analyze, and improve the argument?</p> <p>Why are AAA and SSA invalid criteria for proving triangle congruence?</p>	<p><b>Prior Learning:</b>  In grade 7, students created triangles with rulers and protractors given the measures of all three angles and sides, and they recognized the conditions that create a unique triangle, more than one triangle, or no triangle (7.G.2). In grade 8, students understood that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations (8.G.2).</p> <p><b>Current Learning:</b>  Students use the definition of congruence in terms of rigid motions to show that two triangles are congruent only if corresponding pairs of sides and corresponding pairs of angles are congruent (CPCTC). Students explain how the criteria for triangle congruence (ASA, SAS, SSS, AAS and HL) follow from the definition of congruence in terms of rigid motions. They use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure. Given two figures, they use the definition of congruence in terms of rigid motions to decide if they are congruent. Students prove theorems about lines and angles (e.g., points on a perpendicular bisector of a line segment are exactly those</p>	<p><a href="#">Congruent Triangle Investigations</a> (I)(A) worksheet</p> <p><a href="#">Triangle identification</a> (I) (CU)(E)</p> <p><a href="#">Company Logo Activity</a> (SA) (T)(A)  Proving triangles congruent</p> <p><a href="#">Are the triangles congruent?</a> (I) (CU)</p> <p><a href="#">Triangle Congruence</a> (PSS)</p> <p><a href="#">Recognizing Congruent Triangles</a> (PF) or (FA)</p> <p><a href="#">Do Now</a> Midsegment (FA)</p> <p><a href="#">Identify congruent parts of congruent triangles</a> (CU) (B)</p> <p><a href="#">Triangle Inequality</a> (I) (CU)  Relationship between sides and angles of a triangle</p> <p><a href="#">Properties of Triangles (Triangular Swan)</a> (CU)  Getting use to symbols and different triangle side lengths</p> <p><a href="#">Triangle Congruencey</a> (I) (PF)  White Plains ten day curriculum support document</p> <p><a href="#">Pieces of Proof</a> (I) (CU) (C)  Using pieces of proofs to construct SSS, SAS and ASA proofs (lesson and worksheet)</p> <p><a href="#">Triangle Congruence</a> (Buried Treasure I) (CU)</p> <p><a href="#">YouTube Congruence Proof</a> (PSS)(C) SSS and SAS</p> <p><a href="#">Triangle Congruence and Proof</a> (PF)  Quick worksheets on congruence and proof</p>
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<p>(translation, reflection, rotation) on a given figure.</p> <p>B)• Compare corresponding parts of triangles to determine congruency.</p> <p>C)• Explain and utilize the criteria for triangle congruency.</p> <ul style="list-style-type: none"> <li>o ASA, SAS, SSS</li> <li>o AAS, HL</li> <li>o CPCTC could be taught here.</li> </ul> <p>D)• Prove theorems about lines and angles using the triangle congruency criteria, for example:</p> <ul style="list-style-type: none"> <li>o Points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints.</li> <li>o Points on an angle bisector are equidistant from sides of the angle.</li> </ul> <p>E)• Prove theorems about triangles using the triangle congruency criteria. Examples include:</p> <ul style="list-style-type: none"> <li>o Base angles of isosceles triangles are congruent.</li> <li>o The segment joining midpoints of two sides of a triangle is parallel to the third side and half the length.</li> <li>o The medians of a triangle meet at a point (centroid).</li> </ul>		<p>equidistant from the segment's endpoints). Students prove theorems about triangles (e.g., base angles of isosceles triangles are congruent; the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length; the medians of a triangle meet at a point).</p> <p><b>Future Learning:</b> Students will encounter congruent figures in future units (e.g., similarity [unit 2.1], transformations [unit 2.3], polygons [unit 3.1] and circles [unit 3.3]). The concept of congruency is utilized in fields such as arts, architecture, interior design, engineering, industrial design, and construction-related work.</p>	<p><a href="#">Short triangle assessments</a> (FA)</p> <p><a href="#">Perpendicular bisector theorem proof</a> video (PSS)(I) (D)</p> <p><a href="#">Kuta Math Free Worksheets</a> (PSS) (PF)</p> <p><a href="#">Exit slip</a> (generic) (FA)</p> <p><a href="#">Do Now Triangle Congruence</a> - Why SSA does not work (C)</p> <p><a href="#">Mixed Practice - Triangles</a> (PF)</p> <p><a href="#">When Does SSA work to prove Triangle Congruence?</a> (FA)</p> <p><a href="#">Congruence Quiz</a> (FA) Web-based quiz</p>
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Burrillville	Coventry	Ponaganset	North Providence HOLT MCDUGAL BOOK: Ch. 4-4, 4-5, 4-6, 4-7, 4-9, 5-1, 5-2, 5-3, 5-4 PRENTICE HALL BOOK: Ch. 2-6, 4-2, 4-3, 4-4, 8-1, 8-2, 8-3, 8-4, 8-5	Smithfield
	<p>G-CO.6: 4.3, 4.4, 4.5</p> <p>G-CO.7: 4.3 and reference 13.5, 13.6 and 13.7</p> <p>G-CO.8: 4.4, 4.5</p> <p>G-CO.9: Use 5.1 activity p. 238-Special Segments in</p>	<p><b>Glencoe Geometry:</b> Integration, Application, Connections</p> <p>G-CO.6: 4.3, 4.4, 4.5</p> <p>G-CO.7: 4.3 and reference 13.5, 13.6 and 13.7</p>		

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	<p>Triangles See <a href="#">Video Proof, Angle Bisector</a> and p. 240</p> <p>G-CO.10: 4.6</p>	<p>G-CO.8: 4.4, 4.5</p> <p>G-CO.9: Use 5.1 activity p. 238-Special Segments in Triangles See <a href="#">Video Proof, Angle Bisector</a> and p. 240</p> <p>G-CO.10: 4.6</p> <p><u>Geometry</u> Houghton Mifflin 14-1, 14-2, 14-3, 14-4, (light) 4-1, 4-2, 4-3, 4-4, 4-4, 4-6,4-7 Supplement with: Merrill Geometry 1995 13-5, 13-6, 13-7</p>		
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## Quarter Two

### Unit Three - Triangle Similarity (12 days/6 blocks)

<i>Common Core Standards and Content to Be Learned</i>	<i>Mathematical Practices and Essential Questions</i>	<i>Prior Learning, Current Learning and Future Learning</i>	<i>Instructional Activities (I) Formative Assessments (FA) Summative Assessments (SA) Parent/Student Support (PSS)</i>
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<p><b>Understand similarity in terms of similarity transformations.</b>  <b>G-SRT.2.</b> Given two figures, use the definition of similarity in terms of similarity transformations to decide if they are similar; explain using similarity transformations the meaning of similarity for triangles as the equality of all corresponding pairs of angles and the proportionality of all corresponding pairs of sides.  <b>G-SRT.3.</b> Use the properties of similarity transformations to establish the AA criterion for two triangles to be similar.</p> <p><b>Prove theorems involving similarity.</b>  <b>G-SRT.4.</b> Prove theorems about triangles.  <i>Theorems include: a line parallel to one side of a triangle divides the other two proportionally, and conversely; the Pythagorean Theorem proved using triangle similarity.</i>  <b>G-SRT.5.</b> Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.</p> <p>A)• Establish the AA, SSS, and SAS triangle similarity criteria using similarity transformations.  B)• Determine if two triangles are similar by using the definition of similarity.  C)• Explain the meaning of similarity for triangles using similarity transformations.  D)• Prove theorems about triangles using triangle similarity; examples include:  o A line parallel to one side of a triangle divides the other two proportionally.</p>	<p><b>SMP 1</b> Make sense of problems and persevere in solving them.</p> <p><b>SMP 3</b> Construct viable arguments and critique the reasoning of others.</p> <p>What can you conclude about similar triangles, and how can you prove two triangles are similar?</p> <p>How can similar triangles be used to measure objects, and what are the benefits of using indirect measurement?</p> <p>How can you use triangle similarity to prove the Pythagorean Theorem?</p> <p>What are the similarities and differences, in regard to transformations, between triangle similarity and triangle congruence criteria?</p>	<p><b>Prior Learning:</b>  In grade 7, students solved problems involving scale drawings of geometric figures. They calculated actual lengths and areas from a scale drawing and reproduced scale drawings from a different scale (7.G.1). In grade 8, students used a sequence of rotations, reflections, transformations, and dilations to understand similarity between two-dimensional figures. Students also made informal arguments to establish the AA criterion for similar triangles (8.G.4). In addition to using the Pythagorean Theorem, students explained a proof of the theorem and its converse (8.G.6 and 7). Also, students used similar triangles to derive the equation <math>y = mx</math> and <math>y = mx + b</math> (8.EE.6). In unit 1.1, students learned about angle relationships formed by parallel lines. In unit 1.2, students learned about rigid motions, congruency in objects, and more specifically, triangles.</p> <p><b>Current Learning:</b>  Students use the properties of similarity transformations to establish the AA criterion for two triangles to be similar. Given two figures, students use the definition of similarity in terms of similarity transformations to decide if they are similar. Students explain the meaning of similarity for triangles as the equality of all corresponding pairs of angles and the proportionality of all corresponding pairs of sides. Students prove theorems about triangles. Theorems include:  • A line parallel to one side of a triangle divides the other two proportionally.  • The Pythagorean Theorem (proved using triangle</p>	<p><a href="#">Similar Figures</a> (I) (PSS) Quick interactive dilations</p> <p><a href="#">Exit Slip</a> (FA) (C) meaning of similarity</p> <p>Art of Problem Solving (I)  <a href="http://www.artofproblemsolving.com/Store/products/intro-geometry/exc1.pdf">http://www.artofproblemsolving.com/Store/products/intro-geometry/exc1.pdf</a> (A)</p> <p><a href="#">How Far Can You Go In a New York Minute</a> (I)  -<a href="#">All expenses paid activity sheet</a>  -<a href="#">NY minute map activity sheet 2</a></p> <p>Using scale factors and similarity to find missing lengths</p> <p><a href="#">Dilating a Line</a> (I) (CU)  Use scale factor to find points</p> <p><a href="#">Similarity Practice (Harry the Hiker)</a> (T) (SA)  Proportional reasoning  <a href="#">Harry the Hiker Rubric</a></p> <p><a href="#">Are They Similar?</a> (I) (CU) (B)  Prove triangles congruent</p> <p><a href="#">Similar Triangles Exit Slip</a> (FA)(B)</p> <p><a href="#">Do Now</a> Similar Triangles (FA)</p> <p><a href="#">Exit slip</a> - generic (FA)  Generic exit slip</p> <p><a href="#">Identify Similar Polygons</a> (PF) (B) Kuta worksheet on similar figures</p>
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<p>o The Pythagorean Theorem.</p> <p>E)• Prove theorems and solve problems involving similarity using congruence and similarity criteria.</p>		<p>similarity).</p> <p>Students use the congruence and similarity criteria for triangles in order to solve problems and to prove relationships in geometric figures.</p> <p><b>Future Learning:</b></p> <p>Students will use their knowledge of triangle similarity when studying trigonometric ratios (unit 2.2), similarity transformations (unit 2.3), and circles (unit 3.3). The concept of similarity is useful in fields such as arts, architecture, interior design, engineering, surveying and construction related work.</p>	<p><a href="#">Similar Triangles</a> (PF) (PSS)</p> <p>Kuta worksheet on similar triangles (A)</p> <p><a href="#">Proportional Parts in Triangles and Parallel Lines</a> (PF) (PSS) Kuta worksheet on proportional parts in triangles</p> <p><a href="#">Pythagorean theorem proof using similarity</a> - (PSS)(I) (D) KhanAcademy video</p> <p><a href="#">Activity-Prove Pythagorean Theorem</a> (FA) (D) Cut-out activity</p> <p><a href="#">Proof of Triangle Proportionality Theorem</a> (PSS) (I) (E) Video</p>
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Burrillville	Coventry	Ponaganset	North Providence	Smithfield
	<p>G-SRT.2: Reference 13.8 as introduction to unit (definition of dilation)</p> <p>G-SRT.3: 7.3</p> <p>G-SRT.4: 7.4</p> <p>G-SRT.5: 7.2</p>	<p><u>Glencoe Geometry:</u> Integration, Application, Connections</p> <p>G-SRT.2: Reference 13.8 as introduction to unit (definition of dilation)</p> <p>G-SRT.3: 7.3</p> <p>G-SRT.4: 7.4</p> <p>G-SRT.5: 7.2</p>	<p>HOLT MCDOUGAL BOOK: Ch. 5-7, 5-8, 7-1, 7-2, 7-3, p.490(required), 7-4, 7-5, 8-1</p> <p>PRENTICE HALL BOOK: Ch. 5-3, 5-4, 10-1, 10-2, 10-3</p> <p>*Need to reference page 490 in new book in order to prove the Pythagorean Theorem</p>	

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		<u>Geometry</u> Houghton Mifflin 7-3, 7-4, 7-5, 7-6, 8-1, 8- 2, 8-3	using similarity	
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Unit Four - Right Triangle Trigonometry (14 days/7 blocks)

<i>Common Core Standards and Content to Be Learned</i>	<i>Mathematical Practices and Essential Questions</i>	<i>Prior Learning, Current Learning and Future Learning</i>	<i>Instructional Activities (I) Formative Assessments (FA) Summative Assessments (SA) Parent/Student Support (PSS)</i>
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<p><b>Define trigonometric ratios and solve problems involving right triangles.</b></p> <p><b>G-SRT.6.</b> Understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles.</p> <p><b>G-SRT.7.</b> Explain and use the relationship between the sine and cosine of complementary angles.</p> <p><b>G-SRT.8.</b> Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems. ★</p> <p>A)• Define trigonometric ratios (sine, cosine, tangents) in right triangles by understanding that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles.</p> <p>B)• Calculate the side lengths and the trigonometric ratios associated with special right triangles.</p> <ul style="list-style-type: none"> <li>• Explain and use the relationship between the sine and cosine of complementary angles.</li> </ul> <p>C)• Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.★</p> <p>+ Apply trigonometry to general triangles:</p> <p>D)• Understand and apply the Law of Sines and the Law of Cosines to find unknown measurements in right and non-right triangles (e.g., surveying problems, resultant forces).</p> <p>E)• Prove the Laws of Sines and Cosines and use them to solve problems.</p> <p>F)• Derive the formula <math>A = \frac{1}{2} ab \sin(C)</math> for the area of a triangle by drawing an auxiliary line from a vertex perpendicular to the opposite side. (contextualize)</p> <p>G)• Given a real-world situation, create and solve a system of equations. (decontextualize).</p>	<p><b>SMP 4</b> Model with mathematics.</p> <p><b>SMP 6</b> Attend to precision.</p> <p><b>SMP 8</b> Look for and express regularity in repeated reasoning.</p> <p>How can you apply your knowledge of triangle-relationships to find a side length or angle measure of a triangle?</p> <p>How are right triangle trigonometric ratios related to similarity?</p>	<p><b>Prior Learning:</b></p> <p>In grade 6, students found the area of right triangles by composing into rectangles. (6.G.1)</p> <p>In grade 7, students used facts about supplementary, complementary, vertical, and adjacent angles in a multistep problem to solve for an unknown angle in a figure (7.G.5). Students also recognized and represented proportional relationships between quantities. (7.RP.2a-c). In grade 8, students applied the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions. (8.G.7) In unit 2.1 of this course, students used the definition of similarity in terms of transformations to decide whether two triangles are similar. They explained similarity for triangles as the equality of all corresponding pairs of angles and the proportionality of all corresponding pairs of sides. (G.SRT.2)</p> <p><b>Current Learning:</b></p> <p>Students understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios (sine, cosine, and tangent) for acute angles. Students can explain and use the relationship between the sine and cosine of complementary angles. Students utilize trigonometric ratios and the Pythagorean Theorem to solve applied problems involving right triangles to determine heights, distances, and angle measure.</p> <p>+ Students understand and apply the Law of Sines and the Law of Cosines to find unknown</p>	<p><a href="#">Discovery Lessons - Special Right Triangles</a> (I) (B) Pages 1 - 15, (FA) "Ticket out the door" Pages 4 and 11, Rubric on page 49</p> <p>continued:</p> <p><a href="#">Discovery lesson right triangle trigonometry</a> (I) (A) Pages 16 - 28 (other informal assessments and graphic organizers- Pages 29 - 55)</p> <p><a href="#">Angle of Elevation</a> (I) (CU)(T)(C) worksheet</p> <p><a href="#">Angle of Depression/Declination</a> (I) (CU)(T) (C) worksheet</p> <p><a href="#">Do Now</a> Trig-Determine the missing side (FA)</p> <p><a href="#">Triq Word Problems</a> (CU) (FA)</p> <p><a href="#">Triq Word Problems V2</a> (CU) (FA)</p> <p><a href="#">Kutasoftware worksheet</a> (PF) (PSS) (B) worksheet for reinforcement</p> <p><a href="#">Unit test</a> (SA)</p> <p><a href="#">Triq Word Problem Quiz Maker</a> (SA)</p> <p><a href="#">Use Right Triangle Trig to Solve Problems</a> (FA) (B)</p>
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*Adapted from the Charles A. Dana Center work*

		<p>measurements in right and non-right triangles in real-world problems such as surveying problems and resultant forces. Students prove the Laws of Sines and Cosines and use them to solve problems. Students derive the formula <math>A = \frac{1}{2} ab \sin(C)</math> for the area of a triangle by drawing an auxiliary line from a vertex perpendicular to the opposite side.</p> <p><b><u>Future Learning:</u></b> Students will build upon their knowledge of trigonometry in algebra 2 and fourth-year mathematics courses, as well as college courses. Students will also use this knowledge in engineering, construction, and computer science professions.</p>	<p>Kuta worksheet -no word problems</p> <p><a href="#">Trigonometry Squares</a> ++(PF)</p> <p><a href="#">Discovering the Law of Sines</a> ++ (I) (CU) worksheet</p> <p><a href="#">Discovering the Law of Cosines</a> ++ (I) (CU) worksheet</p>
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Burrillville	Coventry	Ponaganset	North Providence	Smithfield
	<p>G-SRT.6: 8.3 (nice with 8.2)</p> <p>G-SRT.7: Emphasize in teaching the relationship between the sine and cosine values of complementary angles (eg: <math>\sin A = \cos B</math>)</p> <p>G-SRT.8: 8.4</p> <p>G-SRT.9, G-SRT.10, G-SRT.11: 8.5, 8.6 (Honors)</p>	<p><u>Geometry</u> Houghton Mifflin 6-1, 6-4, 6-5, 8-4, 8-5, 8-6, 8-7(Law of Sine and Cosines worksheets)</p> <p><u>Glencoe Geometry</u> G-SRT.6: 8.3 (nice with 8.2)</p> <p>G-SRT.7: Emphasize in teaching the relationship between the sine and cosine values of complementary</p>	<p>HOLT MCDOUGAL BOOK: Ch. 8-2, 8-3, 8-4, 8-5</p> <p>PRENTICE HALL BOOK: Ch. 11-1, 11-2, 11-3, 11-6</p>	

*Adapted from the Charles A. Dana Center work*

		angles (eg: $\sin A = \cos B$ ) G-SRT.8: 8.4		
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Unit Five - Transformations (14 days/7 blocks)

<i>Common Core Standards and Content to Be Learned</i>	<i>Mathematical Practices and Essential Questions</i>	<i>Prior Learning, Current Learning and Future Learning</i>	<i>Instructional Activities (I) Formative Assessments (FA) Summative Assessments (SA) Parent/Student Support (PSS)</i>
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<p><b>Experiment with transformations in the plane.</b>  <b>G-CO.2.</b> Represent transformations in the plane using, e.g., transparencies and geometry software; describe transformations as functions that take points in the plane as inputs and give other points as outputs. Compare transformations that preserve distance and angle to those that do not (e.g., translation versus horizontal stretch).  <b>G-CO.4.</b> Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.  <b>G-CO.5.</b> Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure using, e.g., graph paper, tracing paper, or geometry software. Specify a sequence of transformations that will carry a given figure onto another.</p> <p><b>Understand similarity in terms of similarity transformations.</b>  <b>G-SRT.1.</b> Verify experimentally the properties of dilations given by a center and a scale factor:</p> <ol style="list-style-type: none"> <li>A dilation takes a line not passing through the center of the dilation to a parallel line, and leaves a line passing through the center unchanged.</li> <li>The dilation of a line segment is longer or shorter in the ratio given by the scale factor.</li> </ol> <p>A)• Represent, construct, and draw transformations (reflections, translations, dilations, and rotations) in the plane using a variety of tools, such as transparencies and geometry software.  B)• Describe transformations as functions that take points in the plane as inputs and give other points as outputs.  C)• Compare transformations that preserve distance</p>	<p><b>SMP 4</b> Model with mathematics.</p> <p><b>SMP 5</b> Use appropriate tools strategically.</p> <p><b>SMP 6</b> Attend to precision.</p> <p>After a transformation (rotation, dilation, translation, reflection) has taken place on the coordinate plane, where does the image lie and what does it look like?</p> <p>What tools or methods would you use to construct a figure under a reflection, translation, rotation, and dilation?</p> <p>Compare dilation to rigid motions, how are they similar? How are they different?</p> <p>Where would you find transformations in the real world?</p>	<p><b>Prior Learning:</b>  In grade 5, students defined the coordinate system and graphed ordered pairs called coordinates. (5.G.1) In grade 6, students drew polygons in the coordinate plane given coordinates for the vertices. (6.G.3) In grade 7, students drew (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. (7.G.2) Students also solved problems involving scale drawings of geometric figures. This included computing actual lengths and areas and reproducing scale drawings at a different scale. (7.G.1) In grade 8, students verified experimentally the properties of rotations, reflections, and translations. They learned that lines, segments, and angles maintain their shape and size when transformed. (8.G.1) Students recognized that a two-dimensional figure is congruent (8.G.2)/similar (8.G.4) to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations. Furthermore, students described the effect of dilations, translation, rotations, and reflections on two-dimensional figures using coordinates. (8.G.3) In unit 1.2 of this course, students studied the concept of rigid motion and its effect on polygons.</p> <p><b>Current Learning:</b>  Students represent, construct, and draw transformations in the plane using a variety of tools such as transparencies and geometry software. They describe transformations as functions that take points in the plane as inputs and give other points as outputs. Students compare transformations that preserve distance and angle to those that do not (e.g., translation versus horizontal stretch). Students develop definitions of rotations, reflections, and translations in terms of</p>	<p><a href="#">Representing &amp; combining transformations on Coordinate plane</a> (I) with (FA)(A)</p> <p><a href="#">What Transformation?</a> (FA)  <a href="#">What Transformation 2?</a> (FA)</p> <p><a href="#">Reflection Worksheets</a> (I) (CU)</p> <p><a href="#">Transformations Worksheet</a> (I) (PF) (A)</p> <p><a href="#">Transformation Game</a> (PSS)</p> <p><a href="#">Do Now</a> Reflections (FA) (A)</p> <p><a href="#">Transformation Animation Project</a> (SA) (T) (A)</p> <p><a href="#">Dilation activity</a> pages 9-12 (I) (CU) (F)</p> <p><a href="#">Interactive Transformations</a> (PSS) (A) (D)  Summary of rotations, translations, reflections</p> <p><a href="#">Transformations</a> (FA) A quick, 5-min. check, printable in PDF format (A)</p> <p><a href="#">How to Make an Escher-like Tessellation</a> video (I) (A)</p>
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*Adapted from the Charles A. Dana Center work*

<p>and angle to those that do not (e.g., translation versus horizontal stretch).</p> <p>D)• Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.</p> <p>E)• State a sequence of transformations that will carry a given figure onto another.</p> <p>F)• Verify experimentally the properties of dilations given by a center and a scale factor:</p> <ul style="list-style-type: none"> <li>o The dilation of a line segment is longer or shorter depending on the scale factor.</li> <li>o Dilation takes a line not passing through the center of the dilation to a parallel line, and leaves a line passing through the center unchanged.</li> </ul>		<p>angles, circles, perpendicular lines, parallel lines, and line segments. Students specify a sequence of transformations that will carry a given figure onto another. Students verify experimentally the properties of dilations given by a center and a scale factor:</p> <ul style="list-style-type: none"> <li>• The dilation of a line segment is longer or shorter in the ratio given by the scale factor.</li> <li>• Dilation takes a line not passing through the center of the dilation to a parallel line, and leaves a line passing through the center unchanged.</li> </ul> <p><b>Future Learning:</b> In algebra 2 and precalculus, students will use their knowledge of transformations when building functions from existing functions. Students pursuing art-related programs and careers will continue the study of visual transformations.</p>	<p><a href="#">Summative Assessment- Transformations</a> (SA) Web-based assessment</p> <p><a href="#">Identify the Transformation Rule</a> (PF) (A) (B)</p> <p><a href="#">Constructing and identifying transformations</a> (CU) (B)</p> <p><a href="#">Review of rigid transformations</a> (CU) (B) (E)</p> <p><a href="#">Comparing and contrasting transformstions</a> (SA) (C)</p>
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Burrillville	Coventry	Ponaganset <u>Glencoe Geometry</u>	North Providence HOLT MCDUGAL BOOK: Ch. 1-7, 4-1, 7-6, 9-1, 9-2, 9-3, 9-4, 9-5, 9-6, 9-7 PRENTICE HALL BOOK: Ch. 3-1, 3-2, 3-3, 3-4, 3-5, 3-6, 3-7	Smithfield
	<p>G-CO.2: 13.4, 13.5, 13.6, 13.7, 13.8</p> <p>G-CO.4:</p> <p>G-CO.5: 13.4, 13.5, 13.6, 13.7</p> <p>G-SRT.1: 13.4, 13.5, 13.6, 13.7, 13.8</p>	<p>G-CO.2: 13.4, 13.5, 13.6, 13.7, 13.8</p> <p>G-CO.4:</p> <p>G-CO.5: 13.4, 13.5, 13.6, 13.7</p> <p>G-SRT.1: 13.4, 13.5, 13.6, 13.7, 13.8</p> <p>OnCore Mathematics Geometry Houghton Mifflin Harcourt 5-1, 5-2,</p>		

*Adapted from the Charles A. Dana Center work*

		5-3 <u>Geometry</u> Houghton Mifflin 14-1, 14-2, 14-3, 14-4, 14-5		
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### Quarter Three

Unit Six - Polygons (20 days/10 blocks)

<i><b>Common Core Standards and Content to Be Learned</b></i>	<i><b>Mathematical Practices and Essential Questions</b></i>	<i><b>Prior Learning, Current Learning and Future Learning</b></i>	<i><b>Instructional Activities (I) Formative Assessments (FA) Summative Assessments (SA) Parent/Student Support (PSS)</b></i>
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*Adapted from the Charles A. Dana Center work*

<p><b>Prove geometric theorems [Focus on validity of underlying reasoning while using a variety of ways of writing proofs].</b>  <b>G-CO.11.</b> Prove theorems about parallelograms. <i>Theorems include: opposite sides are congruent, opposite angles are congruent, the diagonals of a parallelogram bisect each other, and conversely, rectangles are parallelograms with congruent diagonals.</i></p> <p><b>Use coordinates to prove simple geometric theorems algebraically [Include distance formula; relate Pythagorean Theorem].</b>  <b>G-GPE.4.</b> Use coordinates to prove simple geometric theorems algebraically. <i>For example, prove or disprove that a figure defined by four given points in the coordinate plane is a rectangle; prove or disprove that the point <math>(1, \sqrt{3})</math> lies on the circle centered at the origin and containing the point <math>(0, 2)</math>.</i>  <b>G-GPE.5.</b> Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point).  <b>G-GPE.6.</b> Find the point on a directed line segment between two given points that partitions the segment in a given ratio.  <b>G-GPE.7.</b> Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula.★</p> <p><b>Experiment with transformations in the plane.</b>  <b>G-CO.3.</b> Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations and reflections that carry it onto itself.</p> <p><b>Apply geometric concepts in modeling situations.</b>  <b>G-MG.3.</b> Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).★</p>	<p><b>SMP 1</b> Makes sense of problems and perseveres in solving them.</p> <p><b>SMP 2</b> Reason abstractly and quantitatively</p> <p><b>SMP 3</b> Construct viable arguments and critique the reasoning of others.</p> <p><b>SMP 4</b> Model with mathematics.</p> <p><b>SMP 7</b> Look for and make use of structure</p> <p><b>SMP 8</b> Look for and express regularity in repeated reasoning</p> <p>How can different quadrilaterals in the coordinate plane be identified and verified?</p> <p>What are the similarities and differences of squares, rectangles, rhombi, kites trapezoids and parallelograms?</p> <p>How would you use the various properties of quadrilaterals to calculate missing sides and angles?</p> <p>How do you use the number of sides of a polygon to calculate the interior and exterior angle measures and their sums?</p>	<p><b>Prior knowledge:</b> In grade 8 students explain a proof of the Pythagorean Theorem and its converse. They apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two dimensions. They apply the Pythagorean Theorem to find the distance between two points in a coordinate system.</p> <p><b>Current Learning:</b> Building on their work with the Pythagorean theorem in grade 8 to find distances, students use a rectangular coordinate system to verify geometric relationships, including properties of special triangles and quadrilaterals and slopes of parallel and perpendicular lines, which relates back to work done in the first course.</p> <p><b>Future Learning:</b> In Algebra 2 students use coordinates to prove simple geometric theorems algebraically. They will apply geometric concepts in modeling situations.</p>	<p><a href="#">slope and parallel and perpendicular lines</a> (CU)</p> <p><a href="#">Hidden Polygons</a> (FA)</p> <p><a href="#">Adding It All Up</a> (I) (CU) (SA) (Web-based)  Interior angles of polygons</p> <p><a href="#">Proving Squares or Rectangles</a> (FA)  Use criteria to determine if quadrilaterals are squares or rectangles</p> <p><a href="#">Quadrilaterals</a> (CU)  Identify possible quadrilaterals based on information given</p> <p><a href="#">Exploring the Slopes of Parallel and Perpendicular Lines</a> (I) (CU)  Calculating slope and making conjectures</p> <p><a href="#">Do Now</a>-graphing a line segment perpendicular to a given line (FA)</p> <p><a href="#">Diagonals to Quadrilaterals</a> (SA) Identify quadrilaterals</p>
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*Adapted from the Charles A. Dana Center work*

			<p>based based on diagonals, deduce characteristics of polygons</p> <p><a href="#">Parallels and Quadrilaterals</a> (FA) or (PF)</p> <p><a href="#">Transformations worksheet</a> (PF)</p> <p><a href="#">Interior Angles in Polygons</a> (PSS) Sum of interior angles in any polygon</p>
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Burrillville	Coventry	Ponaganset	North Providence	Smithfield
	<p>G-CO.11: 6.1A, 6.1, 6.2</p> <p>G-GPE.4: 6.3, 6.4, 6.5</p> <p>G-GPE.5: 3.3 also <a href="#">slope and parallel and perpendicular lines</a></p> <p>G-GPE.6: 12.5</p> <p>G-GPE.7: This standard not addressed in Glencoe Geometry book</p> <p>G-CO.3</p>	<p><u>Glencoe Geometry</u></p> <p>G-CO.11: 6.1A, 6.1, 6.2</p> <p>G-GPE.4: 6.3, 6.4, 6.5</p> <p>G-GPE.5: 3.3 also <a href="#">slope and parallel and perpendicular lines</a></p> <p>G-GPE.6: 12.5</p> <p>G-GPE.7: This standard not addressed in Glencoe Geometry book</p>	<p>HOLT MCDUGAL BOOK:</p> <p>Ch. 1-6, 3-5, 3-6, 6-1, 6-2, 6-3, 6-4, 6-5, 6-6, 10-4</p> <p>PRENTICE HALL BOOK:</p> <p>Ch. 2-4, 5-1, 9-1, 9-2, 9-3, 9-4, 9-5</p>	

*Adapted from the Charles A. Dana Center work*

	G-MG.3	G-CO.3 G-MG.3  Geometry Houghton Mifflin 5-1, 5-2, 5-3, 5-4, 5-5, 13- 1, 13-2, 13-3, 13-4, 13-5, 13-6, 13-7, 13-8, 13-9		
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*Adapted from the Charles A. Dana Center work*

Unit Seven - 2-D and 3-D Measurements and Modeling (10 days/5 blocks)

<i>Common Core Standards and Content to Be Learned</i>	<i>Mathematical Practices and Essential Questions</i>	<i>Prior Learning, Current Learning and Future Learning</i>	<i>Instructional Activities (I) Formative Assessments (FA) Summative Assessments (Parent/Student Support (PSS)</i>
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*Adapted from the Charles A. Dana Center work*

<p><b>Apply geometric concepts in modeling situations.</b>  <b>G-MG.1.</b> Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).★  <b>G-MG.2.</b> Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot).★</p> <p><b>Explain volume formulas and use them to solve problems.</b>  <b>G-GMD.1.</b> Give an informal argument for the formulas for the circumference of a circle, area of a circle, volume of a cylinder, pyramid, and cone. <i>Use dissection arguments, Cavalieri's principle, and informal limit arguments.</i>  <b>G-GMD.3.</b> Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.★</p>	<p><b>SMP 4</b> Model with mathematics.  <b>SMP 6</b> Attend to precision.</p> <p>How is surface area and lateral area the same and how are they different?</p> <p>In what ways can the use of calculating volume be applied to real world situations?</p> <p>What are the connections between two-dimensional and three-dimensional figures?</p> <p>What does the dissection of a three dimensional figure produce?</p> <p>When is it appropriate to use the formulas for area, surface area and volume of geometric figures?</p> <p>What are the differences between units of area and units of length?</p>	<p><b>Prior Learning:</b> In grade 7 students solve real-life problems involving the area and circumference of a circle and surface area and volume of three-dimensional objects, and grade 8 students know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.</p> <p><b>Current Learning:</b> Students' experience with two-dimensional and three-dimensional objects is extended to include informal explanations of circumference, area and volume formulas. Additionally, students apply their knowledge of two-dimensional shapes to consider the shapes of cross-sections and the result of rotating a two-dimensional object about a line.</p> <p><b>Future Learning:</b> In future courses, students will continue to use the relationships between two and three-dimensional objects by applying them to modeling situations.</p>	<p><a href="#">Volume of a Cylinder</a></p> <p><a href="#">Tennis Balls in a Can</a> cross-sections (I)(CU)</p> <p><a href="#">The Water Tank Problem</a> Video - how long does it take to fill the tank</p> <p><a href="#">The Coffee Cup</a> (I, PSS) Volume problem</p> <p><a href="#">Drinking water</a> Volume of a cone (I)(CU)(T)</p> <p><a href="#">Building a Pyramid</a> (I) (CU)</p> <p><a href="#">Ice Cream Cone</a> (CU) Modeling, volume</p> <p><a href="#">(+)- Cavalieri's Principle information/ examples</a></p>
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Burrillville	Coventry	Ponaganset	North Providence	Smithfield
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*Adapted from the Charles A. Dana Center work*

	<p>G-MG.1: 11.1, 11.2</p> <p>G-MG.2: See problem #34 on page 613</p> <p>G-GMD.1: <a href="#">Cavalieri's Principle</a> Use to explain area of a parallelogram</p> <p>G-GMD.2: Honors only, expand upon above link</p> <p>G-GMD.3: 11.5, 11.6, 11.7</p>	<p><u>Glencoe Geometry</u> G-MG.1: 11.1, 11.2</p> <p>G-MG.2: See problem #34 on page 613</p> <p>G-GMD.1: <a href="#">Cavalieri's Principle</a> Use to explain area of a parallelogram</p> <p>G-GMD.2: Honors only, expand upon above link</p> <p>G-GMD.3: 11.5, 11.6, 11.7</p> <p><u>Geometry</u> Houghton Mifflin 11-1, 11-2, 11-3, 11-4, 11-5, 11-6, 11-7, 12-1, 12-2, 12-3, 12-4 12-5 Cavalieri's Prin pg 516</p>	<p>HOLT MCDUGAL BOOK: Ch. 10-1, 10-2, 10-3, 11-1, 11-2, 11-3, 11-4</p> <p>PRENTICE HALL BOOK: Ch. 5-2, 5-5, 5-6, 6-1, 6-2, 6-3, 6-4 (Include Cavalieri's Principle), 6-5, 6-6, 6-7</p>	
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Unit Eight - Relationships in Circles (10 days/5 blocks)

<i><b>Common Core Standards and Content to Be Learned</b></i>	<i><b>Mathematical Practices and Essential Questions</b></i>	<i><b>Prior Learning, Current Learning and Future Learning</b></i>	<i><b>Instructional Activities (I) Formative Assessments (FA) Summative Assessments (SA) Parent/Student Support (PSS)</b></i>
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*Adapted from the Charles A. Dana Center work*

<p><b>Understand and apply theorems about circles.</b></p> <p><b>G-C.1.</b> Prove that all circles are similar.</p> <p><b>G-C.2.</b> Identify and describe relationships among inscribed angles, radii, and chords. <i>Include the relationship between central, inscribed, and circumscribed angles; inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle.</i></p> <p><b>Find arc lengths and areas of sectors of circles [Radian introduced only as unit of measure].</b></p> <p><b>G-C.5.</b> Derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius, and define the radian measure of the angle as the constant of proportionality; derive the formula for the area of a sector.</p>	<p><b>SMP 3</b> Construct viable arguments and critique the reasoning of others</p> <p><b>SMP 4</b> Model with mathematics.</p> <p><b>SMP 5</b> Use appropriate tools strategically.</p> <p><b>SMP 6</b> Attend to precision.</p> <p>What is the relationship between central angles, arc length and circumference?</p> <p>What is the relationship between the circumference and diameter of a circle?</p> <p>What are the properties of circles and their relationships among angles, lines, and line segments in and around circles?</p> <p>How can the area of a circle be used to find the area of a sector?</p>	<p><b>Current Learning:</b> In this unit students prove basic theorems about circles, such as a tangent line if perpendicular to a radius, inscribed angle theorem, and theorems about chords, secants, and tangents dealing with segment lengths and angle measures. They study relationships among segments on chords, secants, and tangents as an application of similarity. In the Cartesian coordinate system, students use the distance formula to write the equation of a circle when given the radius and the coordinates of its center. Given an equation of a circle, they draw the graph in the coordinate plane, and apply techniques for solving quadratic equations, which relates back to work done in the first course, to determine intersections between lines and circles or parabolas and between two circles.</p>	<p><a href="#">Soda Cans</a> (CU)</p> <p><a href="#">Soda Rack</a> (CU)</p> <p><a href="#">Circle Packing</a> (CU)</p> <p><a href="#">Staggered Starts: An Application of Arc Length</a> (CU)</p> <p><a href="#">Arcs &amp; Central Angles</a> (PF)</p> <p><a href="#">Arcs and Chords</a> (PF)</p> <p><a href="#">Tangents to circles</a> (FA)</p> <p><a href="#">Tangents and Circles</a> (PF)</p> <p><a href="#">Inscribed Angles</a> (PF)</p> <p><a href="#">Equation of a Circle</a> (PSS)</p> <p><a href="#">Lawn Sprinklers</a> ++ (T) (SA) This problem is to be selected for a student who seeks advanced enrichment of sector area, area, and arccos</p>
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*Adapted from the Charles A. Dana Center work*

Burrillville	Coventry G-C.1: 9.2 G-C.2: 9.3, 9.4, 9.5 G-C.5: 10.6 (Application of Geometric Probability)	Ponaganset <u>Glencoe Geometry</u> G-C.1: 9.2 G-C.2: 9.3, 9.4, 9.5 G-C.5: 10.6 (Application of Geometric Probability) <u>Geometry</u> Houghton Mifflin 9-1, 9-2, 9-3, 9-4, 9-5, 9-6	North Providence HOLT MCDUGAL BOOK: Prove that all circles are similar, Ch. 12-1, 12-2, 12-3, 12-4, 12-5, 12-6 PRENTICE HALL BOOK: Prove that all circles are similar, Ch. 12-2, 12-3, 12-4, 12-5, 12-6,	Smithfield
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### Quarter Four

### Unit Nine - Algebraic Representations (22 days/11 blocks)

<b><i>Common Core Standards and Content to Be Learned</i></b>	<b><i>Mathematical Practices and Essential Questions</i></b>	<b><i>Prior Learning, Current Learning and Future Learning</i></b>	<b><i>Instructional Activities (I) Formative Assessments (FA) Summative Assessments (SA) Parent/Student Support (PSS)</i></b>
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*Adapted from the Charles A. Dana Center work*

<p><b>Understand and apply theorems about circles.</b></p> <p><b>G-C.3.</b> Construct the inscribed and circumscribed circles of a triangle, and prove properties of angles for a quadrilateral inscribed in a circle.</p> <p><b>G-C.4.</b> (+) Construct a tangent line from a point outside a given circle to the circle.</p> <p><b>Make geometric constructions [Formalize and explain processes].</b></p> <p><b>G-CO.13.</b> Construct an equilateral triangle, a square, and a regular hexagon inscribed in a circle.</p> <p><b>Use coordinates to prove simple geometric theorems algebraically [Include distance formula, relate to Pythagorean theorem].</b></p> <p><b>G-GPE.1.</b> Derive the equation of a circle of given center and radius using the Pythagorean Theorem; complete the square to find the center and radius of a circle given by an equation.</p> <p><b>G-GPE.4.</b> Use coordinates to prove simple geometric theorems algebraically. <i>For example, prove or disprove that a figure defined by four given points in the coordinate plane is a rectangle; prove or disprove that the point <math>(1, \sqrt{3})</math> lies on the circle centered at the origin and containing the point <math>(0, 2)</math>.</i></p> <p><b>Visualize relationships between 2-D and 3-D objects.</b></p> <p><b>G-GMD.4.</b> Identify the shapes of two-dimensional cross-sections of three-dimensional objects, and identify three-dimensional objects generated by rotations of two-dimensional objects.</p>	<p><b>SMP 3</b> Construct viable arguments and critique the reasoning of others.</p> <p><b>SMP 4</b> Model with mathematics.</p> <p><b>SMP 5</b> Use appropriate tools strategically.</p> <p><b>SMP 6</b> Attend to precision.</p> <p>How can a circle be used to construct regular polygons?</p> <p>What characteristics of circles are necessary to graph and write the equations of circles?</p>	<p><b>Current Learning:</b> Given an equation of a circle students draw the graph in the coordinate plane and apply techniques for solving quadratic equations, which relates back to work done in the first course, to determine intersections between lines and circles or parabolas and between two circles.</p>	<p><a href="#">Inscribing and Circumscribing Right Triangles</a> (I)(CU)</p> <p><a href="#">Graph me a circle picture</a> Create a picture with at least 4 circles and their equations (SA)</p> <p><a href="#">Placing a Fire Hydrant</a> - perpendicular bisectors are concurrent at the circumcenter (I)(CU)</p> <p><a href="#">Constructing a hexagon inscribed in a circle</a> (I) <a href="#">Practice worksheet</a> (PF)</p> <p><a href="#">Completing the Square</a> (I)</p> <p><a href="#">Completing the Square Worksheet</a> (CU) (PSS)</p> <p><a href="#">Equations of circles</a> - linking the equation of a circle with its center and radius; individual and small group task (CU)</p> <p><a href="#">Do Now</a>-Finding the center and radius of a circle by completing the square (FA)</p> <p><a href="#">Deriving the equation of a parabola given the focus and directrix</a> (I)</p>
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*Adapted from the Charles A. Dana Center work*

				<a href="#">Coordinate Geometry Proofs</a> Triangle and Trapezoid(I) (PSS)  <a href="#">Coordinate Geometry Proofs</a> Various polygons (I) (PSS)  <a href="#">Exit Slip</a> - Trap Proof (FA)  <a href="#">Cutting Conics</a> (I) (PSS)  <a href="#">Tennis Balls in a Can</a> cross- sections (I)(CU)  <a href="#">Lesson Plan</a> (I)  <a href="#">3-d figures generated by  rotations of 3-d figures</a> (PSS)
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Burrillville	Coventry  G-C.3: 9-4, 9-5A, 9-5 see "in-class example" upper- right corner P. 469 So "Construction Activity" on P. 477 and example #3 on p. 478.  G-C.4: 9.5A	Ponaganset <u>Glencoe Geometry</u>  G-C.3: 9-4, 9-5A, 9-5 see "in-class example" upper- right corner P. 469 So "Construction Activity" on P. 477 and example #3 on p. 478.  G-C.4: 9.5A	North Providence HOLT MCDUGAL BOOK: Construct inscribed and circumscribed circles of a triangle, construct an equilateral triangle, a square, and a regular hexagon inscribed in a	Smithfield
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*Adapted from the Charles A. Dana Center work*

	<p>G-CO.13: <a href="#">Geometric Constructions</a></p> <p>G-GPE.1: 9.8</p> <p>G-GPE.3: No resources in this text</p> <p>G-GPE.4: 6.3, 6.4, 6.5 (extension of topics in unit six)</p> <p>G-GMD.4: 11.1A modeling activity</p> <p><a href="#">3-d figures generated by rotations of 2-d figures</a> (resource)</p>	<p>G-CO.13: <a href="#">Geometric Constructions</a></p> <p>G-GPE.1: 9.8</p> <p>G-GPE.3: No resources in this text</p> <p>G-GPE.4: 6.3, 6.4, 6.5 (extension of topics in unit six)</p> <p>G-GMD.4: 11.1A modeling activity</p> <p><a href="#">3-d figures generated by rotations of 2-d figures</a> (resource)</p> <p><u>Geometry</u> Houghton Mifflin 13-1, 10-4, Parabola and Ellipses from PreCalculus Structure and Method</p>	<p>circle, Ch. 12-7 PRENTICE HALL BOOK: Construct inscribed and circumscribed circles of a triangle, construct an equilateral triangle, a square, and a regular hexagon inscribed in a circle, Ch. 12-1</p>	
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### Unit Ten - Introduction to Conditional Probability (10 days/5 blocks)

*Adapted from the Charles A. Dana Center work*

<b><i>Common Core Standards and Content to Be Learned</i></b>	<b><i>Mathematical Practices and Essential Questions</i></b>	<b><i>Prior Learning, Current Learning and Future Learning</i></b>	<b><i>Instructional Activities (I) Formative Assessments (FA) Summative Assessments (SA) Parent/Student Support (PSS)</i></b>
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*Adapted from the Charles A. Dana Center work*

<p><b>Understand independence and conditional probability and use them to interpret data</b> <i>[Link to data from simulations or experiments]</i>.</p> <p><b>S-CP.1.</b> Describe events as subsets of a sample space (the set of outcomes) using characteristics (or categories) of the outcomes, or as unions, intersections, or complements of other events (“or,” “and,” “not”).</p> <p><b>S-CP.2.</b> Understand that two events A and B are independent events. If the probability of A and B occurring together is the product of their probabilities, and use this characterization to determine if they are independent.</p> <p><b>S-CP.3.</b> Understand the conditional probability of A given B as <math>P(A \text{ and } B)/P(B)</math>, interpret the independence of A and B as saying that the conditional probability of A given B is the same as the probability of A, and the conditional probability of B given A is the same as the probability of B.</p> <p><b>S-CP.4.</b> Construct and interpret two-way frequency tables of data when two categories are associated with each object being classified. Use the two-way table as a sample space to decide if events are independent and to approximate conditional probabilities. <i>For example, collect data from a random sample of students in your school on their favorite subject among math, science, and English. Estimate the probability that a randomly selected student from your school will favor science given that the student is in tenth grade. Do the same for other subjects and compare the results.</i></p> <p><b>S-CP.5.</b> Recognise and explain the concepts of conditional probability and independence in every day language and everyday situations. <i>For example, compare the chance of having lung cancer if you are a smoker with the chance of being a smoker if you have lung cancer).</i></p> <p><b>Use rules of probability to compute probabilities of compound events in a uniform probability model.</b></p> <p><b>S-CP.6.</b> Find the conditional probability of A given B as the fraction of B’s outcomes that also belong to A, and interpret the answer in terms of the model.</p>	<p><b>SMP 1</b> Make sense of problems and persevere in solving them.</p> <p><b>SMP 2</b> Reason abstractly and quantitatively.</p> <p><b>SMP 4</b> Model with mathematics.</p> <p>How can data be analyzed to make inferences and/or predictions, based on surveys, experiments, probability and observational studies?</p> <p>What is the difference between the addition and multiplication principals of counting?</p> <p>How are the the probabilities of mutually exclusive events and of dependent events determined?</p> <p>What are conditional probabilities?</p> <p><b>*NOTE: S-CP standard is assessed in Algebra II**</b></p>	<p><b>Prior Learning:</b> In grade 7 students investigate chance processes and develop, use and evaluate probability models and understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. In grade 8 students construct and interpret scatter plots and investigate line of best fit. Students use the equation of the linear model to solve problems in the context of bivariate measurement data. Students construct two-way tables summarizing data on two categorical variables collected from the same subjects.</p> <p><b>Current Learning:</b> Students understand independence and conditional probability and use them to interpret data. They use rules of probability to compute probabilities of compound events in a uniform probability model, and they use probability to evaluate outcomes of decisions. They use probabilities to make fair decisions, and analyze decisions and strategies using probability concepts. Students apply the probability product rule. Students solve authentic problems involving conditional probability and independence using everyday language.</p> <p><b>Future Learning:</b> This unit sets the stage for work in Algebra II, where the ideas of statistical inference are introduced. Evaluating the risks associated with conclusions drawn from sample data requires an understanding of probability concepts. Referred to under standard S-MD</p>	<p><a href="#">Lucky Dip</a> - Modelling conditional probability (I) (CU)</p> <p><a href="#">Two-way frequency tables</a>-TI-Nspire Student Activity(CU) <a href="#">Teacher notes</a></p> <p><a href="#">Charity Fair</a> (SA)(T) <a href="#">Scoring guide</a> <a href="#">Examples of student work</a></p> <p><a href="#">Addition Rules for Probability</a>-Short lesson and exercises (PF)</p> <p><a href="#">Do Now</a>-Probability of independent events(FA)</p> <p><a href="#">edHelper.com</a>-Probability practice worksheet-varied (PF)(PSS)</p> <p><a href="#">Random Walk III</a> (CU) (T)</p> <p><a href="#">Sampling Bias</a> (I)</p> <p><a href="#">multiplication Rule of Probability</a> (I) (PSS) (CU) (T)</p> <p><a href="#">Compute Probability of Compound Events</a> (PF)</p> <p><a href="#">Do Now Probability</a> (CU)</p>
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*Adapted from the Charles A. Dana Center work*

S-CP.7. Apply the Addition Rule, $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$ , and interpret the answer in terms of the model.			
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Burrillville	Coventry	Ponaganset	North Providence	Smithfield
	<p>S-CP.1: Glencoe Algebra 2, 0.4 The Counting Principle</p> <p>S-CP.2:</p> <p>S-CP.3:</p> <p>S-CP.4: Glencoe Algebra 2, P. 1002 Frequency Tables and Histograms</p> <p>S-CP.5:</p> <p>S-CP.6, S-CP.7: Glencoe Algebra 2, 12.3</p> <p>On Core Mathematics Geometry Unit 11 (from Mary)</p> <p><b>**NOTE: S-CP standard s assessed in Algebra II**</b></p>	<p><u>Mcdougal Little Algebra II: Equations, graphs, applications</u></p> <p>S-CP.1, S-CP.2, S-CP.3, S-CP.4, S-CP.5, S-CP.6, S-CP.7: Chapter 12</p> <p>On Core Mathematics Geometry Unit 11</p> <p><u>Glencoe Algebra II: Integration, Applications, connections</u></p> <p>S-CP.4: 6.9</p> <p><b>**NOTE: S-CP standard is assessed in Algebra II**</b></p>	<p>North Providence HOLT MCDUGAL BOOK: Ch. 13-2, 13-3, 13-4, 13-5</p> <p>PRENTICE HALL BOOK: <i>Not in book, use other resources</i></p> <p>Topics: Unions, intersections or complements of events, two-way frequency tables, collecting data from a random sample, finding conditional probability, applying the addition rule <math>P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)</math></p>	

*Adapted from the Charles A. Dana Center work*